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IS 7770 (1975): Method for Sensory Evaluation of Ghee
(Clarified Butterfat) [FAD 19: Dairy Products and
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*Indian Standard*METHOD FOR
SENSORY EVALUATION OF *GHEE*
(CLARIFIED BUTTERFAT)

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Indian Standard

METHOD FOR SENSORY EVALUATION OF *GHEE* (CLARIFIED BUTTERFAT)

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(Continued on page 2)

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(Continued from page 1)

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Indian Standard

METHOD FOR SENSORY EVALUATION OF *GHEE* (CLARIFIED BUTTERFAT)

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 August 1975, after the draft finalized by the Sensory Evaluation Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 A consumer judges the quality of *GHEE* by its taste and aroma and accepts it on this basis. Though preference for *GHEE* flavour varies considerably from region to region, the main characteristics for its sensory evaluation, namely, flavour, texture, colour and clarity remain the same. In this standard an attempt has been made to unify the approach for sensory evaluation of *GHEE* as existing in various dairies and *GHEE* refineries. It is expected that this standard will help in training the personnel and in establishing more uniform criteria for sensory evaluation of *GHEE* by consumers and well-organized producers.

0.3 This standard is complimentary to IS : 3508-1968*.

1. SCOPE

1.1 This standard prescribes conditions, technique, method and evaluation card for sensory evaluation of *GHEE* (clarified butterfat).

2. TERMINOLOGY

2.1 For the purpose of this standard, the following definitions in addition to those given in IS : 5126 (Part I)-1969† and IS : 5126 (Part II)-1969‡, shall apply.

2.1.1 *Brown* — This refers to overheated flavour in *GHEE* which results when butter is clarified at 130°C and above. This is usually accompanied by a brownish to dark discoloration.

*Methods of sampling and test for *GHEE* (butterfat).

†Glossary of general terms for sensory evaluation of foods: Part I Methodology.

‡Glossary of general terms for sensory evaluation of foods: Part II Quality characteristics.

2.1.2 Burnt — same as 'Brown'.

2.1.3 Curdy — This flavour defect is an antithesis of burnt flavour and is a result of under clarification (*KACHCHA*) during *GHEE* making. The flavour is reminiscent of curd left over during refining.

2.1.4 Greasy — This is associated with undesirable texture in grains of *GHEE* and is a result of oxidation affecting the firmness of grains.

2.1.5 Smoky — A characteristic in *GHEE* heated over cowdung fire using improperly designed fire place (*CHULAH*) where smoke directly comes in contact with butterfat during its clarification.

3. GENERAL CONDITIONS

3.1 The general conditions for sensory evaluation of *GHEE* shall be as given in IS : 6273 (Part I)-1971*.

4. PANELISTS

4.1 Selection — Persons with normal sensitivity for taste and odour should be selected. They should have ability to detect small differences between paired samples. The panelists should be trained to distinguish and discriminate between *GHEE* samples with minor flavour, colour or texture differences. Selection among the available panelists should be based on significant capacity to distinguish quality variations and other attributes. Those who dislike *GHEE* or any similar milk products should be excluded from the panel.

NOTE — A separate detailed Indian Standard covering all aspects of panel selection is under preparation.

4.2 Training

4.2.1 Preparation of *GHEE* Samples for Training — A control of fresh *GHEE* prepared from butter or cream which represents all the desirable qualities of flavour, texture, colour and freedom from *GHEE* residue shall be served along with the following defective samples for training of the panelists:

- a) *Acidic GHEE* — Prepare small lots of *GHEE* from cream or butter samples aged to develop lactic acidity of 0.5, 1.0 and 1.5 percent to obtain three different samples of *GHEE* having acidity (oleic) varying from 1.5 to 4.5 percent.
- b) *Oxidized* — In a closed container, fill up to about 2 cm from the lid and pass oxygen gas into *GHEE* maintained at 79°C for a period of one hour.

*Guide for sensory evaluation of foods: Part I Optimum requirements.

- c) *Curdy* — Add 5 to 10 g of curd into 100 g of *GHEE* and leave for 10 to 12 hours at 40°C before presentation to the trainee panelists.
- d) *Smoky* — Prepare small quantity of *GHEE* in an open wide-mouthed pan (*KARAH*) on a smoky cowdung fire (*CHULAH*). Leave the product open on the smoky *CHULAH* for 30 minutes to allow absorption of smoky flavour. Depending upon the degree of smokiness desired in the samples, add 10, 20 and 30 percent of smoky *GHEE* into fresh *GHEE*.
- e) *Burnt* — Heat *GHEE* for 20 minutes at 130°C to produce burnt flavour. Admix overheated *GHEE* (10, 20 or 30 percent) to fresh *GHEE* for different intensity of burnt flavours.
- f) *Greasy Texture* — Expose *GHEE* in a glass container to direct sunlight for a period of three hours to develop both oxidized and greasy defects. Store the samples at 5°C and bring the sample to about 15°C before presenting to the panelists.
- g) *Adulterated* — Make various admixtures of hydrogenated vegetable fats or body fat (such as lard) with *GHEE* ranging from 10 to 30 percent. Let the panelists make observations on quality variation as affected by the adulterant.

4.2.2 Procedure for Training — The panelists should be familiarized with all desirable characteristics of fresh *GHEE* manufactured in Northern, Southern and Saurashtra regions which are distinctly known for their mellow, burnt and curdy flavours. They should further be trained to distinguish and detect common defects in *GHEE* such as smoky, oxidized, rancid and burnt flavours; brown colour; curdy, greasy and hard textures; and presence of *GHEE* residue and foreign matter. The panelists should also be trained to detect common adulterants of *GHEE*.

4.2.2.1 A series of 20 judgements should be obtained from each prospective panelists for each defect utilizing a pair of samples with known differences. To compensate for the known variations from day to day, a qualifying test should be given for a 3-day period. Those who make an acceptable (75 percent correct) score should be chosen.

4.3 The panelists should be checked once in three months for their consistency and acuity.

4.4 Number of Panelists — Five to seven panelists should be employed in the evaluation to arrive at consistent and statistically valid results. At least 10 judgements should be taken.

5. SAMPLING, PREPARATION AND PRESENTATION

5.1 Sampling — A representative sample should be drawn from the lot according to the method prescribed in 2 of IS : 3508-1966*. Precautions should be taken to avoid extraneous contamination in drawing, handling and preservation of samples.

5.2 Preparation of Samples — *GHEE* samples should be presented in 50 ml bottles for evaluation. They may be warmed up to see any visible suspended impurities.

5.3 Amount of Each Sample — A sample of 30 ml or 25 g should be sufficient.

5.4 Number of Samples — Number of samples in one session should not exceed 5.

5.5 Coding — Coding should be done as recommended in 7 of IS : 6275-1971†.

6. PROCEDURE

6.1 Technique of Evaluation — Sensory evaluation should always start with the visual observation of the sample. Colour should be judged first followed by the texture, odour, taste and aroma. Suspended impurities should be judged after melting the *GHEE* (if already solidified).

6.2 Method — Follow composite scoring method as described in 4.2.8 of IS : 6273 (Part II)-1971‡.

6.3 Evaluation Card — Use the evaluation card given in Table 1 for recording observations. Calculate the final score by deducting score under Section B from score under Section A.

6.4 Grading — After computation of the data recorded in Table 1 by the panelists, the following gradation should be specified:

Quality	Score	Grade
Excellent	90 or more	A
Good	80-89	B
Fair	60-79	C
Poor	59 and below	D

7. STATISTICAL EVALUATION OF RESULTS

7.1 For the purpose of statistical analysis of data, one of the methods recommended in 4.2.8.4 of IS : 6273 (Part II)-1971‡ should be adopted.

*Methods of sampling and test for *GHEE* (butterfat).

†Specification for lower extremity full length brace with joints with locks.

‡Guide for sensory evaluation of foods: Part II Methods and evaluation cards.

TABLE 1 EVALUATION CARD FOR GHEE

(Clause 6.3)

Name Date

Batch or Code No..... Time

A. Assign score for each sample for different characteristics. First go through Section B.

CHARACTERISTICS	MAXIMUM SCORE	SAMPLE SCORE
i) Flavour	50	
ii) Texture	30	
iii) Colour	10	
iv) Freedom from suspended impurities (GHEE residue)	10	

B. Indicate, if any, the degree of defects such as the following. Encircle the one applicable and deduct from the attribute:

CHARACTERISTICS	DEFECT	DEGREE OF DEFECT		
		Suspicion	Slight	Pronounced
i) Flavour	{ Curdy*	1	3	15
	{ Burnt†	3	5	15
	{ Rancid	3	5	15
	{ Oxidized	1	3	15
	{ Smoky	1	3	10
ii) Texture	{ Greasy	3	5	10-20
	{ Hard	3	5	10-20
iii) Colour	Brown burnt	1	5	5
iv) Freedom from suspended impurities	{ GHEE residue	1	3	5

*Only in Southern and Northern regions.

†Only in Northern, Eastern and Saurashtra regions.

INDIAN STANDARDS
ON
SENSORY EVALUATION

IS:

- 5126 (Part I)-1969 Glossary of general terms for sensory evaluation of foods: Part I Methodology
- 5126 (Part II)-1969 Glossary of general terms for sensory evaluation of foods: Part II Quality characteristics
- 6273 (Part I)-1971 Guide for sensory evaluation of foods: Part I Optimum requirements
- 6273 (Part II)-1971 Guide for sensory evaluation of foods: Part II Methods and evaluation cards
- 7675-1975 Method for sensory evaluation of beer
- 7768-1975 Method for sensory evaluation of milk
- 7769-1975 Method for sensory evaluation of table butter